Patent claims

1. Method for controlling at least one component of a technical plant by means of a PI controller that as control parameters has a control ratio (Kp) and an integral-action time (Tn), characterized by the following steps:

a) the integral-action time (Tn) is defined,

b) an initial value (Kp0) of the control ratio (Kp) is defined,

c) at least one set value (S) of a control quantity of the component is defined and

d) during operation of the technical plant, the actual value (I) of the controlled variable is determined and the control ratio (Kp) is changed relative to the time response of the actual value (I) until the actual value (I) of the control variable remains within a tolerance band (Tb) relative to the set value (S),

2. Method in accordance with Claim 1, characterized in that the integral-action time (Tn) is determined from the system time constants (K1, K2, ..., K3), particularly from the sum of the system time constants of the component to be controlled.

3. Method in accordance with Claim 1 or 2, characterized in that in step d) the control ratio (Kp) is reduced if the time response of the actual value (I) has a dwell time (T11) of less than the first defined time period (T1) during which the actual value (I) has a value within the tolerance band.

4. Method in accordance with Claims 3, characterized in that

in step d) the control ratio (Kp) is only reduced if in addition a first change rate (v1) of the actual value (I) is greater than a second change rate (v2) of the set value (S0).

5. Method according to one of Claims 1 to 4
characterized in that
in step d) the control ratio (Kp) is increased, if the time response of the actual value (I) has a rise time (22) comprising the time period from the beginning of a change in the set value (S) to reaching an instantaneous value of the actual value (I) within the tolerance band, which is greater than a second defined time period (T2).

6. Controller (R) for controlling at least one component of a technical plant, that is designed as a PI controller having a control ratio (Kp) and an integral-action time (Tn) as control parameters characterized by

- a first controller input (E1) by means of which the controller (R) can be supplied with a defined value for the integral-action time (Tn),
- a second controller input (E2) by means of which the controller (R) can be supplied with the control ratio (Kp),
- a third controller input (E3) by means of which the controller (R) can be supplied with a set value (S) of a control quantity of the component, and
- an adaption unit (A) that during the operation of the technical plant constantly applies the actual value (I) of the control variable (U) and by means of which the control ratio (Kp) can be constantly changed relative to the time response of the actual value (I), until the actual value (I) of the control variable remains within a tolerance band (Tb) relative to the set value (S).

7. Controller in accordance with Claim 6,
characterized in that
the integral-action time (Tn) is determined from system time constants (K1, K2, ..., K3), in particular from the sum of the system time constants of the component to be controlled.

8. Controller in accordance with Claim 6 or 7,
characterized in that
the control ratio (Kp) is reduced by the adaption unit (A) if the time response of the actual value (I) has a dwell time (T11), during which the actual value (I) comprises a value within the tolerance band, which is smaller than a first defined time period (T1).

8. Controller in accordance with one of claims 6 to 7,
characterized in that
the control ratio (Kp) is reduced by the adaption unit (A) if the time response of the actual value (I) has a dwell time (T11), during which the actual value (I) comprises a value within the tolerance band, which is smaller than a first defined time period (T1).

9. Controller in accordance with Claim 8
characterized in that
the control ratio (Kp) is only then reduced by means of the adaption unit (A), if in addition a first change rate (v1) of the actual value (I) is larger than a second change rate (v2) of the set value (S).

10. Controller according to one of Claims 6 to 9
characterized in that
the control ratio (Kp) is increased by means of the adaption unit (A), if the time response of the actual value (I) has a rise time (T22) comprising the time period from the beginning of a change in the set value (S) to reaching an instantaneous value of the actual value (I) within the tolerance band, which is greater than a second defined time period (T2).